CropPest Ontario

Agriculture Development Branch
Editor—Albert Tenuta– Field Crop Pathologist
www.omafra.gov.on.ca/croppest

ISSN 1203-2204 VOLUME NO. 17, ISSUE NO. 03 June 6 2012

"IN THIS ISSUE"

- Armyworms are Marching
- Summer Seeding Forages
- Preventing Spray Drift
- Ontario Weed Tour—July 11th
- SWCDD
- Nitrogen Status in 2012 Corn Fields
- Soybean Leaf Feeding

Armyworms are Marching

Tom Cowan, Entomologist, OMAFRA, Ridgetown

They're here early this year! We've been hearing reports of true armyworm numbers getting fairly high in some wheat fields and even above threshold in some cases. I think it's a good time to post a refresher on armyworm management.

In Cereals

Armyworms typically feeding in the lower leaves of the wheat and work their way upwards. Feeding is done at night and sometimes on overcast days. During the day you can find the larvae hiding deeper in the canopy or under debris or plant litter on the ground. When scouting for armyworm look for chewed leaves and brown frass on the plants or on the ground near the plant. Armyworm may also start to clip the heads off maturing plants as they look for food at later crop growth stages. The best time to scout is at dusk when the larvae come out to feed.

....continued on page 2

Comments, suggestions or articles are welcome. To be added to the distribution list please contact:

Albert Tenuta or Mirjam Hall
Phone 519-674-1690
Fax 519-674-1564
albert.tenuta@ontario.ca or mirjam.hall@ontario.ca

PIONEER. A DuPont Company
Hyland BUILDING
NK syngenta
Bayer CropScience
FS
MONSANTO imi ine
BASF The Chemical Company

Ministry of Agriculture, Food and Rural Affairs
Ontario

Action Thresholds for Cereals

5 Larvae less than 1 inch long (2.5 cm) per square foot (30 cm x 30 cm) warrant control. 1 square foot is equal to 19" of row.

With fewer leaves this year after all the frosts, protection of the flag leaf is particularly important. Early control is critical as insecticides are much more effective on smaller larvae and less damage to the plants will have occurred. After the soft dough stage, the benefit of insecticide applications drops dramatically unless head clipping is occurring.

OMAFRA Field Crop Staff Working for You!

Dawn Pate	Manager—Field Crops	519-826-3257
Joel Bagg	Forage Specialist	705-324-5856
Scott Banks	Emerging Crops Specialist	613-258-8359
Tom Cowan	Entomology, Field Crops Program Lead (A)	519-674-1696
Horst Bohner	Soybean Specialist	519-271-5858
Christine Brown	Nutrient Management Field Crop Program Lead	519-537-8305
Mike Cowbrough	Weed Management Field Crops Program Lead	519-824-4120 ext.52580
Brian Hall	Edible Beans & Canola Specialist	519-271-0083
Peter Johnson	Cereals Specialist	519-271-8180
Adam Hayes	Soil Management Specialist—Field Crops	519-674-1621
Ian McDonald	Applied Research Coordinator-Field Crops	519-824-4120 ext 56707
Gilles Quesnel	IPM Program Lead-Field Crops (Bilingual)	613-258-8250
Greg Stewart	Corn Industry Program Lead	519-824-4120 ext 54865
Albert Tenuta	Pathologist – Field Crops Program Lead	519-674-1617

Look carefully at the larvae on the plants and check them for small yellowish oval eggs deposited just behind the head. These are eggs belong to a parasitic fly and will soon hatch and kill the armyworm larvae. Fungal and bacterial diseases also attack armyworm and can quickly reduce populations. Diseased armyworms can be found at the tops of the wheat plants where they tend to migrate before they die. These larvae look sickly and are sluggish and should not be included in your assessment since they won't be doing any feeding.

If the larvae are over 1 inch long (2.5 cm) most of the feeding damage has occurred and there is no benefit to applying an insecticide.

Insecticide Recommendations

Before using an insecticide, consider how mature the plants are in order to comply with the pre-harvest interval (PHI). Registered insecticides for armyworm control are:

- Matador 120 E (PHI = 28 days)
- Dylox 420 LC (PHI = 21 days)
- Sevin LXR Plus (PHI = 14 days wheat)
- Lannate Toss-N-Go (PHI = 20 days)
- Delegate WG (PHI = 21 days).

Figure 1. Armyworm

Summer Seeding Forages

Joel Bagg, Forage Specialist, OMAFRA, Lindsay

In years of excessive alfalfa winterkill, summer seeding can be a good way to quickly re-establish new fields so that full season yields can be harvested the following year. Summer seeding of alfalfa forage mixtures can be a viable alternative to spring seeding. The most reliable time to seed forages is usually in the spring. With an April or early-May seeding, moisture is usually adequate and the legumes are well established for winter survival. However, spring seeding is not always possible due to a number of factors, including wet field conditions in the spring. Fields seeded during the summer can be treated as established stands the next year with a full yield potential.

The biggest risk of summer seeding forage is lack of moisture after seeding. Do not use companion crops with summer seedings. They compete too strongly for available soil moisture and will reduce stand establishment. Summer seedings present a higher risk on heavier soils. The following are some points to consider regarding successful summer seeding of forages:

Seeding Date

There are two critical risks associated with summer seeding alfalfa.

1. Seeding too early in the summer increases the risk of hot, dry conditions during germination and seedling development. Summer seedings fail if seeds germinate and then starve for moisture.

2. Seeding too late increases the chance of freeze-up before the alfalfa seedlings are adequately established. Seeding must be done early enough so that the alfalfa can accumulate sufficient root reserves to survive the winter.

Alfalfa needs about 6 weeks of growth after germination to survive the winter, and will generally survive if a crown develops before a killing frost. Although weather and soil condition vary each year, this means recommended summer seeding dates are as follows:

- > 2900 CHU areas – August 10th – 20th
- 2500 – 2900 CHU areas – August 1st – 10th
- < 2500 CHU areas- July 20th – 30th.

Lack of moisture for adequate germination is always a risk. If soil conditions are extremely dry and no rain is in the forecast, abandon plans for summer seeding.

Most grasses can usually be successfully seeded up to 2 to 3 weeks later than alfalfa. Sufficient growth is desired to prevent erosion. Birdsfoot trefoil and reed canarygrass have slow seedling development, so summer seedings of these species are rarely successful.

Fertility and pH

Rapid growth and establishment of alfalfa seedlings is important. Apply the required fertilizer and lime according to a soil test. If soil phosphorus levels are low, applying a starter phosphate fertilizer 5 cm (2 inches) below the seed in a band will encourage rapid root growth and establishment. For soils low in pH, lime should be added at least a year in advance to allow for reaction in the soil.

Seedbed Preparation

Seed-to-soil contact is important for germination, particularly in dry summer conditions. A loose, lumpy seedbed dries out quickly. A fine seedbed can be more difficult to prepare in August on clay loam soils, compared to loams, sandy loams and silt loams. Soil should be firm enough at planting for a footprint to sink no deeper than 1 cm (3/8 inch). Packing before seeding can help. Seed shallow (6 mm or ¼ inch) into a firm seedbed. Always pack the soil after seeding. Usually no adjustment is needed in seeding rate.

Heaving

Summer seedings of alfalfa are more prone to heaving in late-winter and early-spring, especially if root development was limited due to slow germination or cool fall weather. Avoid summer seeding on heavier soils that have a history of alfalfa heaving.

Weed Control

Winter annual weeds, such as pennycress and shepherd's purse, can be a common problem. It is not unusual to have to spray summer seedings. If warranted, a low rate of 2,4-DB can be used for broadleaf weed control, but be sure that the alfalfa is in the 1 to 4 trifoliate stage. Caution must be used to avoid delaying growth due to the herbicide effect. Refer to OMAFRA Publication 75 "Guide To Weed Control", p. 170. www.omafra.gov.on.ca/english/crops/pub75/chapter10.htm If these weeds are not controlled, they will show up in the first cut next spring, but should not be a problem after that. Annuals such as lambs quarters and pigweed will be killed by fall frosts. Annual grasses are usually not a big problem. Perennials, such as quackgrass, need to be controlled before seeding.

Volunteer Cereals

Seeding forage after winter wheat is harvested can be a good opportunity if the wheat is harvested early enough, but competition from volunteer wheat can be a serious problem. This is especially true if a lot of light grain went through the combine, such as fusarium infection situations. One approach to reduce the problem is to do some light tillage to encourage the grain to germinate. A burndown with glyphosate or a second cultivation 10 days later will destroy much of this grain. Mouldboard plowing to bury the grain is more effective than disking, but may dry the soil out too much. In a pure alfalfa stand, a grass herbicide could be used.

Use Recommended Varieties

High performance, disease resistant, fast growing varieties from the Ontario Forage Variety Performance list should be used. Avoid the less modern, slower growing, less disease resistant varieties. Cheap seed is not always a bargain and can be disappointing.

Alfalfa Following Alfalfa

Seeding alfalfa after alfalfa is high risk. Old stands of alfalfa release a toxin that reduces the germination and growth of new alfalfa seedlings. This is called "alfalfa autotoxicity". Establishment problems can result if the existing stand was not plowed or sprayed at least 3 weeks before reseeding. These toxins are present for up to 6 months, and are sufficient to permanently reduce new stand yields. For maximum yields, one year of an alternate crop is required. The toxins are not present the first year in new seedings, so seeding failures can be reseeded without an autotoxicity effect. Carryover of disease is also a significant problem when seeding alfalfa after alfalfa, particularly on stands that died as a result of crown and root rots.

No-till

No-till summer seeding can be successful if proper attention is paid to seed placement (seeding equipment) and seedling competition from weeds (weed control). In dry conditions no-till can be a good option to preserve soil moisture. However, using no-till to reseed an existing alfalfa field in August is high risk. In addition to the autotoxicity risk, slugs and disease that may exist in the old sod can damage new seedlings.

Harvest

Harvesting summer seeded alfalfa in the fall of the establishment year is not recommended. Summer seeded stands should be harvested a little later the following spring than established stands, to allow development of root reserves for strong regrowth.

Summer seeding of alfalfa can be an alternative to spring seeding. Good management and attention to some of the potential pitfalls is required to minimize the risk of establishment failure.

Preventing Spray Drift

Janice LeBoeuf, Vegetable Crop Specialist, OMAFRA, Ridgetown

This is one to share with the neighbours. Every spring, we see way too much spray drift onto vegetable crops (and other crops, but that's for another newsletter). Not only can this reduce yields by killing or injuring the crop, but there are many other serious consequences to the victim of spray drift such as:

- reduced crop marketability due to pesticide residue
- reduced crop marketability due to effects of herbicide injury (appearance, size)
- inability to meet contract commitments for volume of crop
- delay in crop maturity resulting in inability to meet contract commitments to buyer
- delay in crop maturity resulting in loss of premium (early) markets
- loss of customers or markets due to gaps in supply of the crop
- long term injury to perennial crop or windbreaks
- rifts between neighbours, family, friends
- large legal bills

Neighbours or custom operators working in adjacent fields may not realize how sensitive the horticultural crops are or the potentially devastating consequences of drift injury that go well beyond the yield loss.

Spray drift can be prevented, but all spray applicators need to educate themselves. Several resources including videos, online tools, written material, and public shaming are listed below.

CropLife Canada and OMAFRA have produced two short videos (5 minutes each) that are well worth watching and sharing (http://www.omafra.gov.on.ca/english/crops/resource/spraydrift.htm)

Bayer CropScience, PRIDE Seeds, and Weather INnovations Incorporated have launched weathercentral.ca, (http://weathercentral.ca/) which features a site-specific 3-day hourly forecast of spraying conditions. It's extremely easy to use and I would suggest printing off the forecast for your records for each day you are spraying. Maybe you can email it to the neighbours and area custom operators every morning, too?

OMAFRA also has a factsheet called Pesticide Drift from Ground Applications (http://www.omafra.gov.on.ca/english/crops/facts/11-001.htm). Not only does it give details and data on how to reduce drift, but it also provides guidance on what to do if you suspect drift damage. It includes a section on Legislation and Liability, but if you want to know more about that from an insurance company perspective, see the Tomato Day presentation from Western General Insurance http://www.opvg.org/tomato-day.aspx on the website of the Ontario Processing Vegetable Growers at http://www.opvg.org/tomato-day.aspx.

If you think none of this will get through to the person running the sprayer beside your vegetable field, try this article that Helmut Spieser, OMAFRA Engineer wrote a couple of year ago "Ontario's Worst Sprayer Operator". http://www.omafra.gov.on.ca/english/crops/field/news/croppest/2010/08cpo10a1.htm The nomination form might get their attention.

…..continued on page 6

Ontario Weed Tour
1 Day Only
Wednesday, July 11th, 2012

The Ontario Weed Committee has decided that the Weed Tour will be one day in 2012 and in the future. The Weed Tour will rotate between the various research stations over the years. In 2012 the Ontario Weed Tour will be on **Wednesday, July 11.** It will be at the Harrow Research Station at 9:00 am and at the University of Guelph, Ridgetown Campus at 2:00 pm.

If there are any questions, please contact: Dr. Rob Nurse, Agriculture and Agri-Food Canada, Harrow, Ontario at robert.nurse@agr.gc.ca or at 519-738-1288.

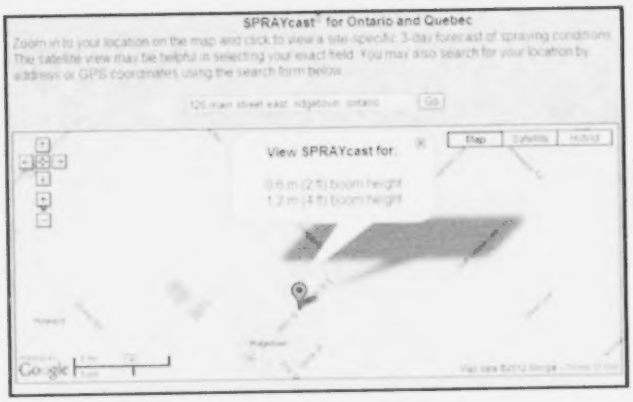
SPRAYcast® for Ontario and Quebec
Zoom in to your location on the map and click to view a site-specific 3-day forecast of spraying conditions.
The satellite view may be helpful in selecting your exact field. You may also search for your location by
address or GPS coordinates using the search form below.
View SPRAYcast for:
Map
Satellite
Hybrid
0.6 m (2 ft) boom height
1.2 m (4 ft) boom height
Google

Figure 1. SprayCast Online Interface

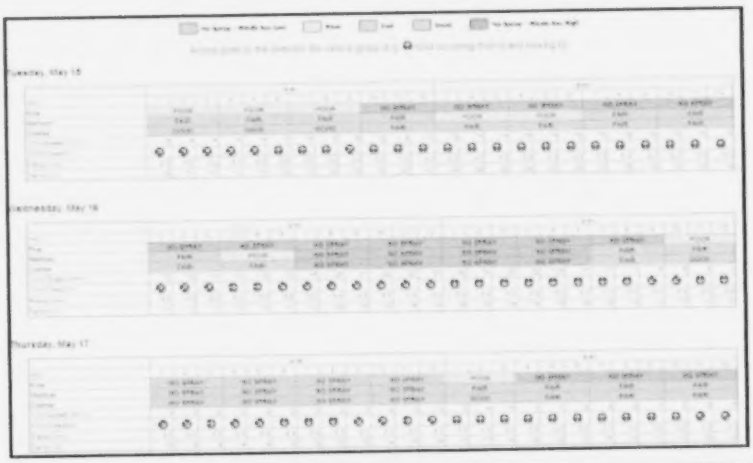

Figure 2. SprayCast Forecast

Southwest Crop Diagnostic Days 2012

Visit the website for Topics and Registration Details

www.diagnosticdays.ca

Wednesday, July 4th
and
Thursday, July 5th

SOUTHWEST CROP DIAGNOSTIC DAY

Nitrogen Status in 2012 Corn Fields

Ian McDonald, Applied Research Co-ordinator, Field Crops, OMAFRA
Greg Stewart, Corn Industry Program Lead, OMAFRA, Guelph

Background

Again in 2012 the OMAFRA field crops team surveyed a range of corn fields to determine what impact the weather has had on the level of residual soil nitrate. Conditions have been almost polar opposite to last year when April was cool and May was wet. What impact has the warm and dry spring weather had on residual N supply?

To provide some insight on this question soil samples were taken from 65 fields on May 31 from across the province and included a range of previous crop and soil types.

Results

On the medium and light textured soils that had not received fertilizer nitrogen or manure soil nitrate levels were somewhat higher than normally observed. The average from these soils this year was 12.2 PPM, compared to an historical average of 11.0 PPM and last years average reading of 9.5 PPM. These levels correspond to approximate sidedress N recommendations of 95 (12.2), 105 (11.0) and 118 (9.5) lbs of N/acre.

This year the heavier soils (clay loams and clays) do not seem to be responding as one might expect. Survey readings on these soils are averaging 8.3 PPM, where they traditionally run in the 9-10 PPM range. So while the heavier soils are showing more residual N than last year (average was 7 PPM) they are not above normal like many of the medium textured fields.

Some other fields were sampled that had received manure or early spring applications of nitrogen, predominantly UAN sprayed on with herbicide. These fields showed significantly higher nitrate values than average supporting the idea that mineralization of nitrogen from organic sources has been significant this spring and that losses from dentriciation or leaching have been low.

Recommendations

1. In general terms on the medium textured soils there appears to be an opportunity to trim N side-dress N rates slightly (5-15 lbs N/acre) compared to average. This does not appear to be the case on heavier textured soils

2. We remind side-dressers that the numbers presented here are averages and that there is considerable variability across sites. Taking your own pre-sidedress N test in order to fine tune application rates is strongly recommended.

3. Producers with manure or other organic sources should be sure to give adequate credit for the nitrogen provided to the crop. This can be done through soil N testing or by evaluating manure analysis, rate and timing factors.

4. Some stakeholders feel compelled to apply nitrogen at rates higher than normal based on experiences in 2011. This approach is not supported by the soil nitrate data gathered in this survey.

Acknowledgements

Soil samples were collected from a range of fields across southwestern Ontario. OMAFRA would like to acknowledge the contributions to this survey by the many farm co-operators and industry stakeholders who participated in this effort. Appreciation is also extended to SGS Agri-Food Laboratories for rapid soil sample analysis.

Table 1. PSNT Soil N Test Levels For Fields Requiring Side Dress Nitrogen Application May 31, 2012

# Fields Sampled	Sample Depth	Soil Texture	Soil Nitrate N Level (ppm)
16	0-30cm (0-12")	Clay, Clay Loam	8.3
35	0-30cm (0-12")	Loam, Silt Loam, Sandy Loam	12.2

Table 2. OMAFRA Publication 811 Table 1-24. Nitrogen Recommendations Based on Nitrate-Nitrogen

Spring Nitrate Nitrogen[1] in top 30 cm (1 ft)	Pre-Side-Dress Nitrate Nitrogen[2] in top 30 cm (1 ft)	Actual Nitrogen Recommended	
(ppm)	(ppm)	(kg/ha)	(lb/acre)
1	1	211	189
2	3	199	178
3	4	186	166
4	5	173	155
5	7	161	144
6	8	148	132
7	9	135	121
8	10	123	110
9	12	110	98
10	13	97	87
11	14	85	76
12	16	72	64
13	17	59	53
14	18	47	42
15	20	34	30
16	21	21	19
17	22	9	8
18	23	0	0

Conversion Factors

To convert soil test results from kg/ha to ppm for a 30-cm (12-in.) sample, divide kg/ha by 4. For example, if the nitrate-nitrogen concentration of a sample taken from the top 30 cm (12 in.) of soil is 32 kg/ha, the nitrate nitrogen is 32 kg/ha ÷ 4 = 8 ppm.

[1] Spring nitrate-nitrogen refers to samples taken within 5 days of planting (either before or after).

[2] Pre-side-dress nitrate-nitrogen refers to samples taken when the corn is 15-30 cm (6-12 in.) tall (usually within the first 2 weeks of June).

Soybean Leaf Feeding

Horst Bohner, Soybean Specialist, OMAFRA, Stratford

Early-season leaf feeding before the 3rd trifoliate can look serious because plants are small. However, soybeans can compensate for large amounts of leaf loss with little impact on yield. Soybeans will put on new leaves quickly at the top of the plant and unaffected leaves actually grow larger to compensate. Before the plants begin to flower, up to 100% of the leaves can be removed with almost no yield loss if the rest of the growing season is favourable. If the plant is cut off below the cotyledons it will not recover. Once the plant starts to flower (growth stage R1), leaf feeding becomes more critical because the plants requirements from photosynthesis increase. (Refer to Table 1.) There are two main spring leaf feeding culprits of soybeans in Ontario. These are slugs and bean leaf beetles.

Figure 1. Slug Feeding

Slugs

Slug feeding can resemble hail damage, but damaged leaves have more of a "skeleton" appearance. Refer to Slugs feed on leaves, but they can also feed on germinating seeds, hollowing them out before they can emerge. There is one generation per year but two populations – one maturing as adults in the spring and one maturing as adults in the fall. Slugs are most active during cool and wet periods, and prefer environments with high humidity and cool temperatures. Crop residue or manure provides shelter from the sun.

	Percent Leaf Area Destroyed							
Growth Stage	10	20	30	40	50	60	70	80
Ve-Vn	-	-	-	-	-	-	-	-
R1	-	1	2	3	3	4	5	6
R2	-	2	3	5	6	7	9	12
R2.5	1	2	3	5	7	9	11	15
R3	2	3	4	6	8	11	14	18
R3.5	3	4	5	7	10	13	18	24
R4	3	5	7	9	12	16	22	30
R4.5	4	6	9	11	15	20	27	37
R5	4	7	10	13	17	23	31	43
R5.5	4	7	10	13	17	23	31	43
R6	1	6	9	11	14	18	23	31
R6.5	4	7	10	13	17	23	31	43

Source: National Crop Insurance Services Inc., 1997.

Tillage can be used against slugs, since the reduction of the crop residues on the surface exposes the slugs to dehydration. Plowing is not necessary. Vertical tillage (RTS, Turbo-till, etc.) in the spring can reduce slug numbers. Zone tillage or row sweepers also helps reduce spring feeding.

SLUG CONTROL

- Planting into conditions that help the crop to grow quickly can avoid heavy damage. Waiting to seed later in the spring can reduce damage if the field is known to have high slug numbers.
- There are no economical chemical methods available in field crops. Slug baits are available but are expensive and are only recommended for use in small problem areas. Experiments with 28% nitrogen/water mixtures or foliar potash applications have proven to be inconsistent.

Bean Leaf Beetles (BLB)

Adult feeding appears as small round holes between the veins of the leaves. Cotyledons and seedling plants can be clipped off by heavy populations. Late-season pod feeding can also be a problem. Bean leaf beetles feed on the surface of the pod, leaving only a thin film of tissue to protect the seeds within the pod. These pod lesions increase the pod's susceptibility to secondary pod diseases such as alternaria. Pods may also be clipped off the plant, but this is not the primary cause of yield loss. The most important concern is that BLB is a vector of bean pod mottle virus. This virus causes the plant and seed to become wrinkled and mottled, reducing the quality of the seed.

The bean leaf beetle can be confused with other insects, such as the lady beetle. The way to distinguish a BLB is by the small black triangle behind the head. Bean leaf beetle adults vary in colour, but always have a small black triangle visible behind the head. They may or may not have four spots, and are about 5 mm (1/5 in.) in length. Refer to Photo #2.

BLB Control

- CruiserMaxx seed treatment does an excellent job to control early season feeding. Fields with a history of bean leaf beetles should be planted with treated seed.

Figure 2. Bean Leaf Beetle

- If early season numbers are high enough to clip off plants below the cotyledon, the field should be sprayed. If leaf feeding exceeds 30% before flowering and 15% during flowering, then a foliar pesticide application is warranted. Matador, Silencer, Lagon, and Cygon are registered for the control of bean leaf beetle

- For late-season feeding (pod fill to maturity), the action threshold is 25% leaf feeding unless pod feeding is observed. If 10% of the pods on the plants have feeding injury and the beetles are still active in the field, a spray is warranted. Days-to-harvest intervals should be considered before spraying.